REMARKS/ARGUMENTS

Entry of this amendment is requested on the grounds that applicant did not have a clear understanding of how the examiner was construing the term "diagonal" until the final Office action was issued. Entry of this amendment is also requested on the grounds that it places the claims in better form for consideration on appeal.

In paragraph 4 of the Office action, claims 1, 9-11, 19-20, and 26 are rejected under 35 U.S.C. § 102(b) as being anticipated by Hanounik et al. "Linear-time Matrix Transpose Algorithms Using Vector Register File with Diagonal Registers", 2001 (hereinafter referred to as Hanounik). It is respectfully submitted that the examiner has misunderstood the meaning of the term diagonal as used in the instant application. Further, even if the examiner's meaning of the term diagonal is controlling, Hanounik still fails to anticipate the rejected claims.

In paragraph 5 of the Office action, the examiner states that Hanounik teaches a method for transposing data which includes "shifting the data along a plurality of diagonals of the plurality of processing elements until the processing elements in each of said plurality of diagonals has received the data held by every other processing element in that diagonal." (emphasis added) To illustrate this teaching, the examiner cites Figure 1 of Hanounik and the diagonal which includes elements 21 and 12.

First, the examiner has misconstrued the term "diagonal' as that term is used in the instant application. The step-by-step progression of diagonal shifts and selection of data illustrated in Figures 17A-17H and described in paragraph [0084] of the instant application illustrates the correct construction of the term. If data is being shifted diagonally up and to the right, as data shifts off the top or right of the array, it reappears at the bottom or left of the array. This is illustrated by looking at the data which begins at position h2 in Figure 16A and has wrapped to the upper-left corner position in Figure 17B following one shift up and to the right. Based on this wrapping capability illustrated in the instant application, the data illustrated in Figure 1 of Hanounik is actually made up of eight diagonals each containing eight elements. To further clarify, the eight diagonals of Figure 1 of Hanounik are:

Diagonal #1   11, 82, 73, 64, 55, 46, 37, 28

Diagonal #2   21, 12, 83, 74, 65, 56, 47, 38

Diagonal #3   31, 22, 13, 84, 75, 66, 57, 48

Diagonal #4   41, 32, 23, 14, 85, 76, 67, 58

Diagonal #5   51, 42, 33, 24, 15, 86, 77, 68

Diagonal #6   61, 52, 43, 34, 25, 16, 87, 78

Diagonal #7   71, 62, 53, 44, 35, 26, 17, 88

Diagonal #8   81, 72, 63, 54, 45, 36, 27, 18

When the diagonals are viewed in this manner, it is clear that Figure 1 of Hanounik cannot anticipate claims 1 and 26 of the instant application because the processing elements in each diagonal do not receive the data held by every other processing element in that diagonal as required by the claim language. If that were the case, the elements in diagonal #2, which the examiner uses as an example, would need to receive the data held by all the elements in diagonal #2, i.e., 21, 12, 83, 74, 65, 56, 47, 38. As shown by Figure 1 of Hanounik, the processing element in position 21 holds its own data and receives data from only 12. Thus, the element in position 21 does not receive the data of every other element in its diagonal as required by claims 1 and 26.

Second, even if the examiner's construction of diagonal is used, the method of Figure 1 of Hanounik still does not meet the requirements of claims 1 and 26 that the elements in each diagonal receive the data of every other processing element in the diagonal. Under the examiner's understanding, the array of Figure 1 is made up of fifteen diagonals containing between one and eight elements. In the Office action, the examiner cites the diagonal containing elements 21 and 12. However, looking for example at the diagonal comprised of 82, 73, 64, 55, 46, 37, and 28, and focusing on the element which originally holds the value 82, it can be seen by the step-by-step progression through Figure 1 that the element that originally holds 82 receives data from 46 in step 1 and 28 in step 2. Because claims 1 and 26 require, for each diagonal, that the elements in the diagonal receive data from every other element in the diagonal, and the method disclosed in Figure 1 of Hanounik clearly does not do that, it is respectfully submitted that independent claims 1 and 26 are not anticipated by Hanounik.

Minor changes have been made to claims 1 and 26 to correct obvious grammatical errors.

Claim 11 contains different language than the language of claims 1 and 26, but the import is the same such that the arguments set forth above are equally applicable to claim 11.

In paragraph 13 of the Office action, claims 21-25 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,968,447 to Apisdorf, hereinafter "Apisdorf." The examiner points to Figs. 3, 4A, 4B, and 6 as well as column 13, lines 4-19 and column 14, lines 9-28. In response to the examiner's rejection, claim 21 has been amended.

Newly amended claim 21 now makes clear that data is shifted along diagonals rather than simply among the processing elements. In addition, amended claim 21 describes that once initialized, the current count at each processing element is either incremented or decremented but not both as is contemplated in Apisdorf.

Applicant at this time has not submitted any arguments in support of the patentability of the dependent claims. It is believed that independent claims 1, 11, 21, and 26 are now in condition for allowance such that all of the dependent claims which depend either directly or indirectly therefrom are also in condition for allowance.

Applicant has made a diligent effort to place the instant application in condition for allowance. Accordingly, a Notice of Allowance for claims 1- 26 is respectfully requested. If the examiner is of the opinion that the instant application is in condition for disposition other than through allowance, the examiner is respectfully requested to contact applicant's attorney.

Respectfully submitted,

Edward L. Pencoske
Reg. No. 29,688
JONES DAY
One Mellon Center
500 Grant Street, Suite 3100
Pittsburgh, PA, USA, 15219
(412) 394-9531
(412) 394-7959 (Fax)
Attorneys for Applicant